

0373034-04.04

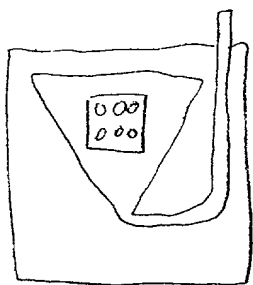
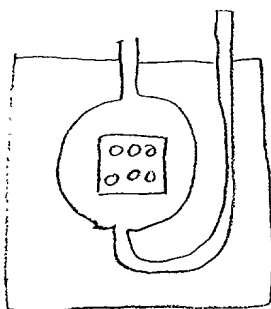
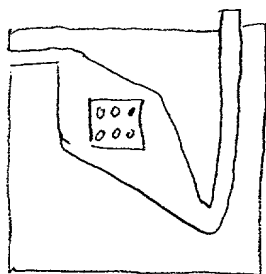
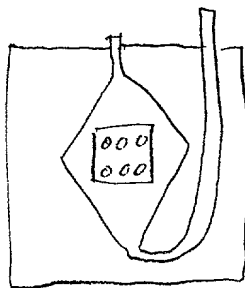
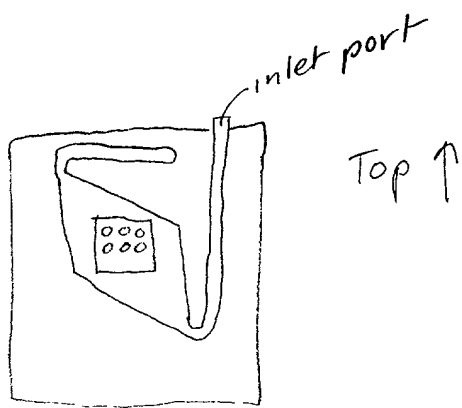


Figure 1

0975094-01101

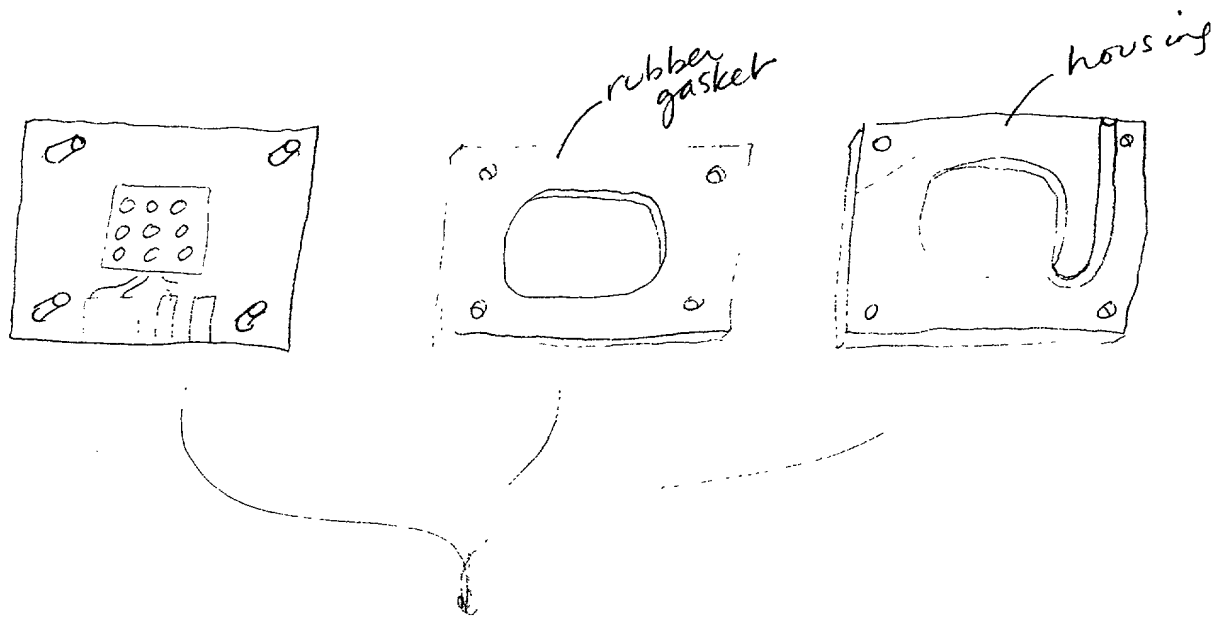


FIGURE 2

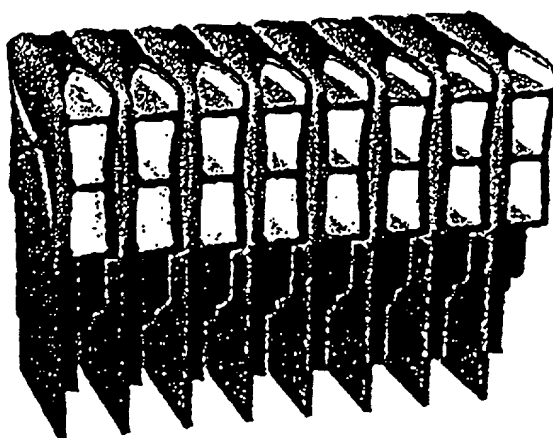
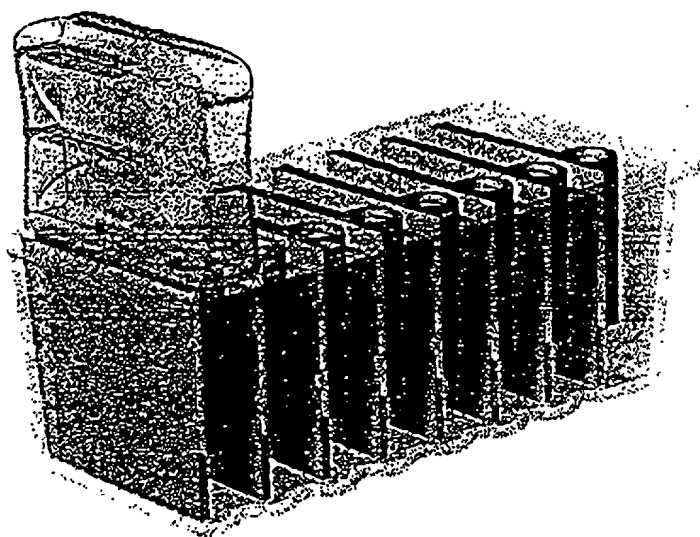
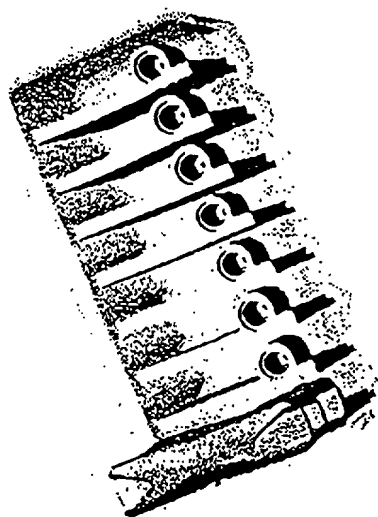
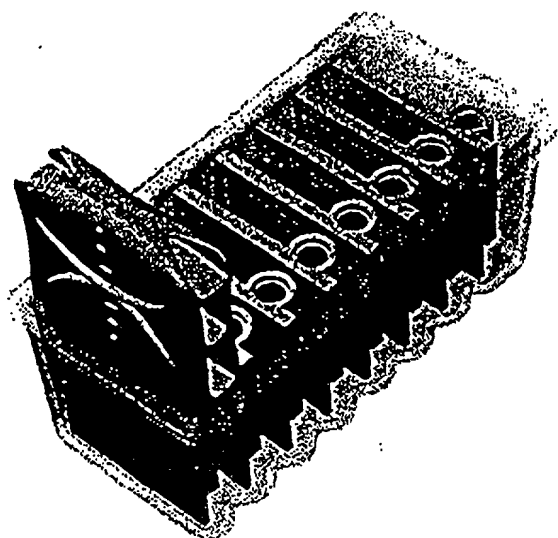
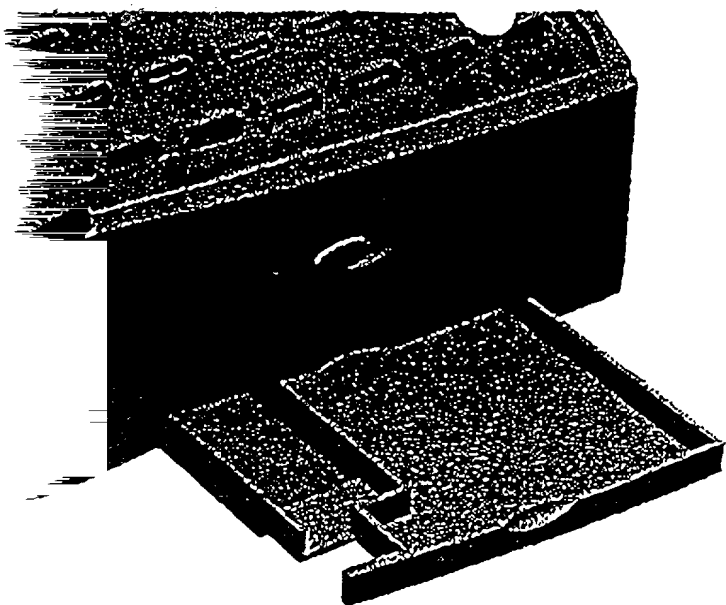


FIGURE 3

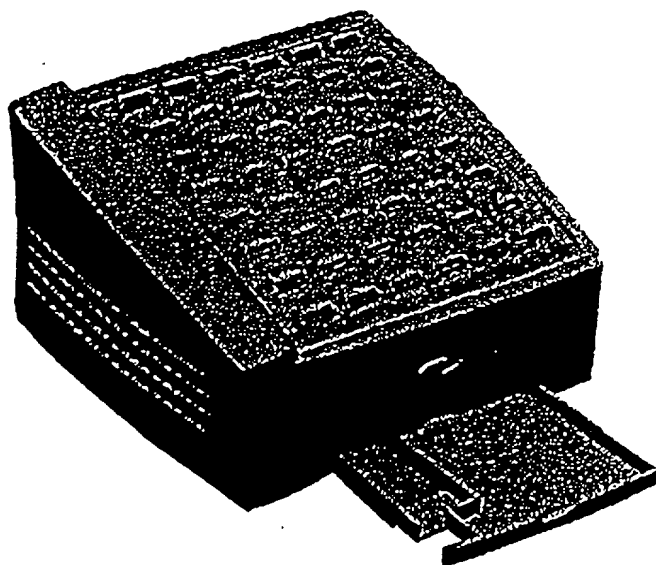
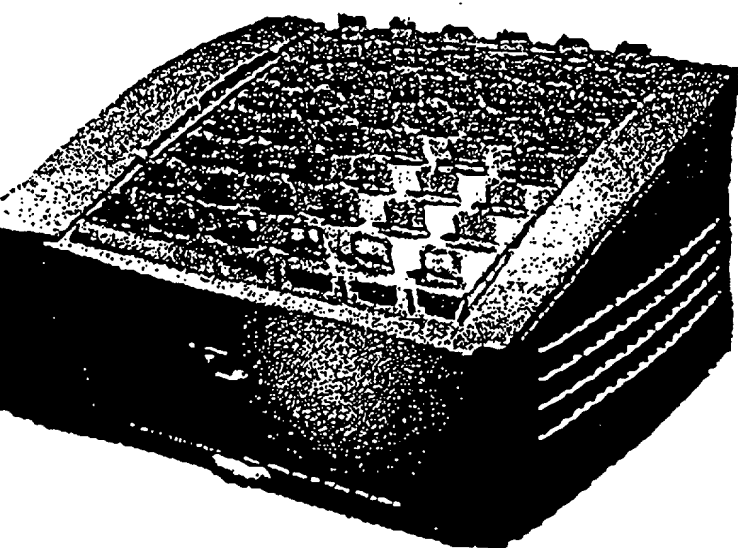
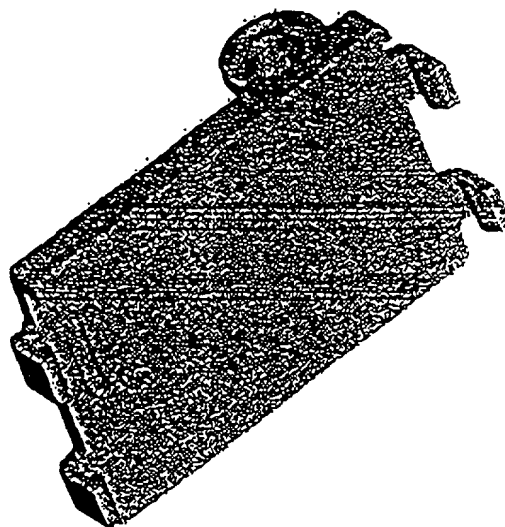
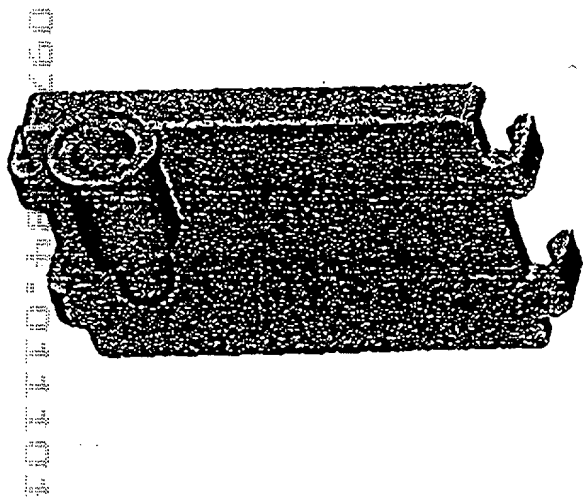
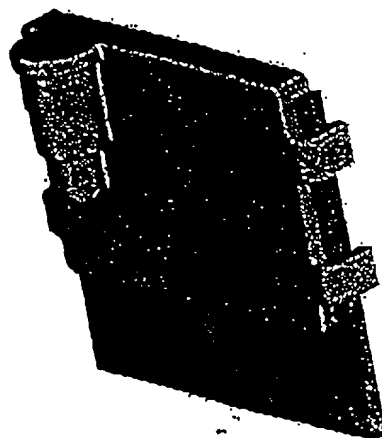
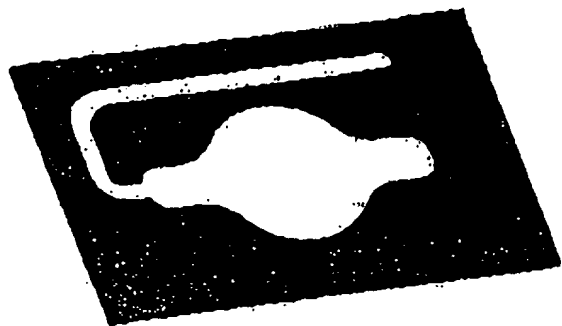


FIGURE 4

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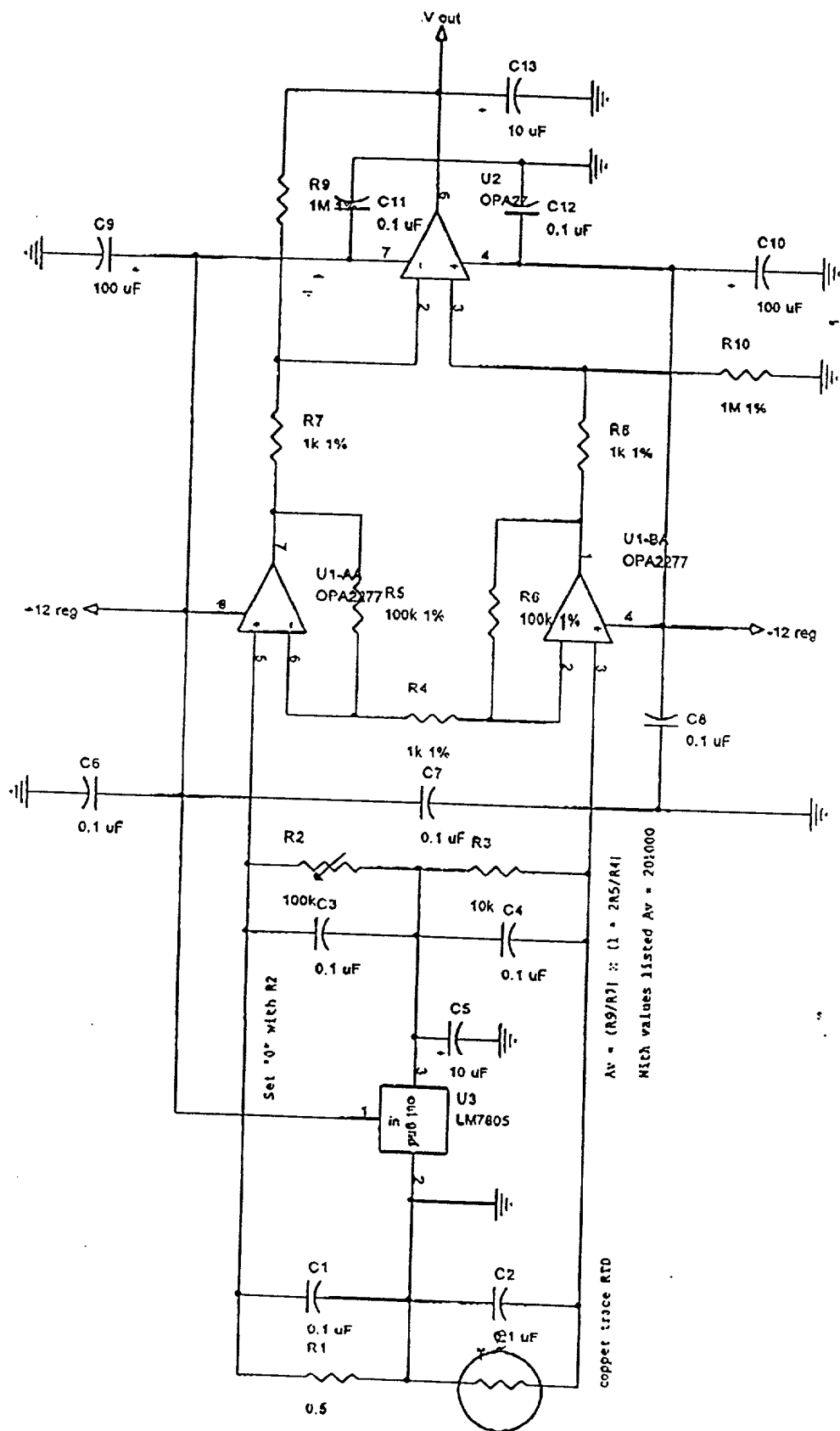
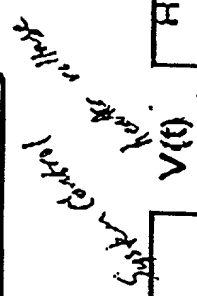


FIGURE 5

[illegible]

T_s = Temperature set point
 T_{x1} = Xternal temperature 1, low (measured)
 T_{x2} = Xternal temperature 2, high (measured)
 T_l = Liquid temperature (desired)
 $V(t)$ = Heater voltage (driven)
 $Q(t)$ = Generated heat (driven)
 $Q_i(t)$ = Interfering heat (unknown)

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Board Assembly

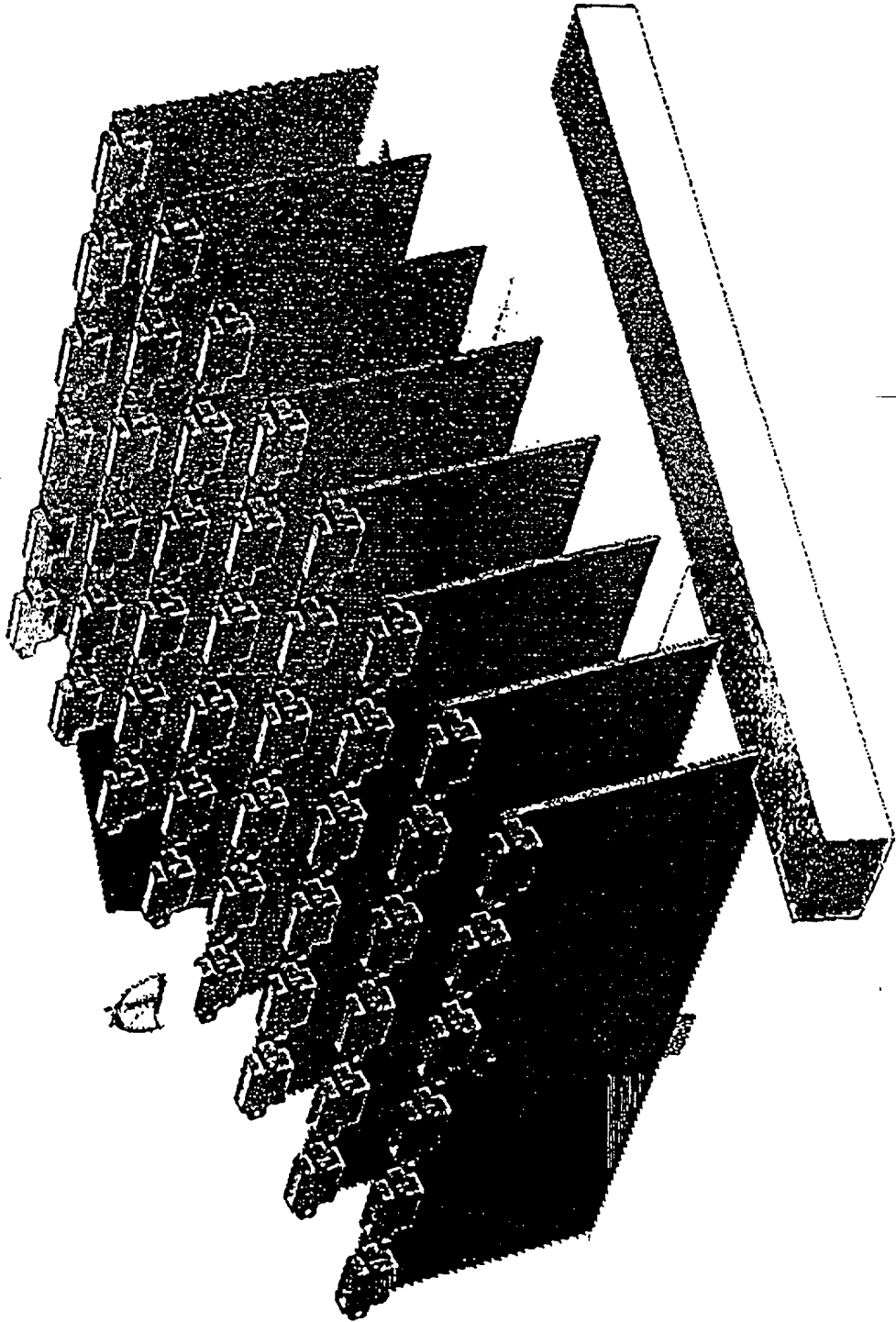


FIGURE 7

SOFTWARE FOR HYDRA

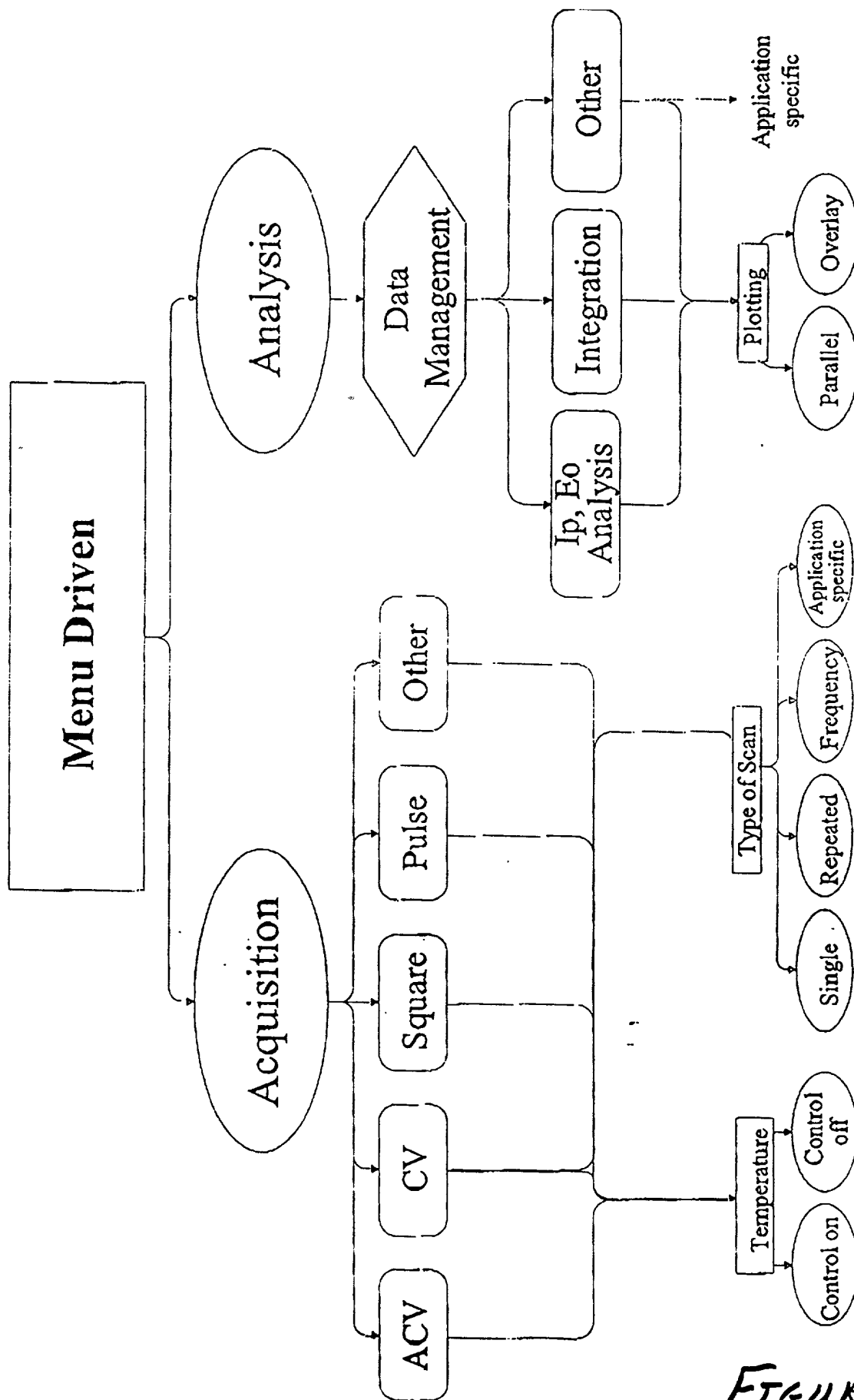


FIGURE 8

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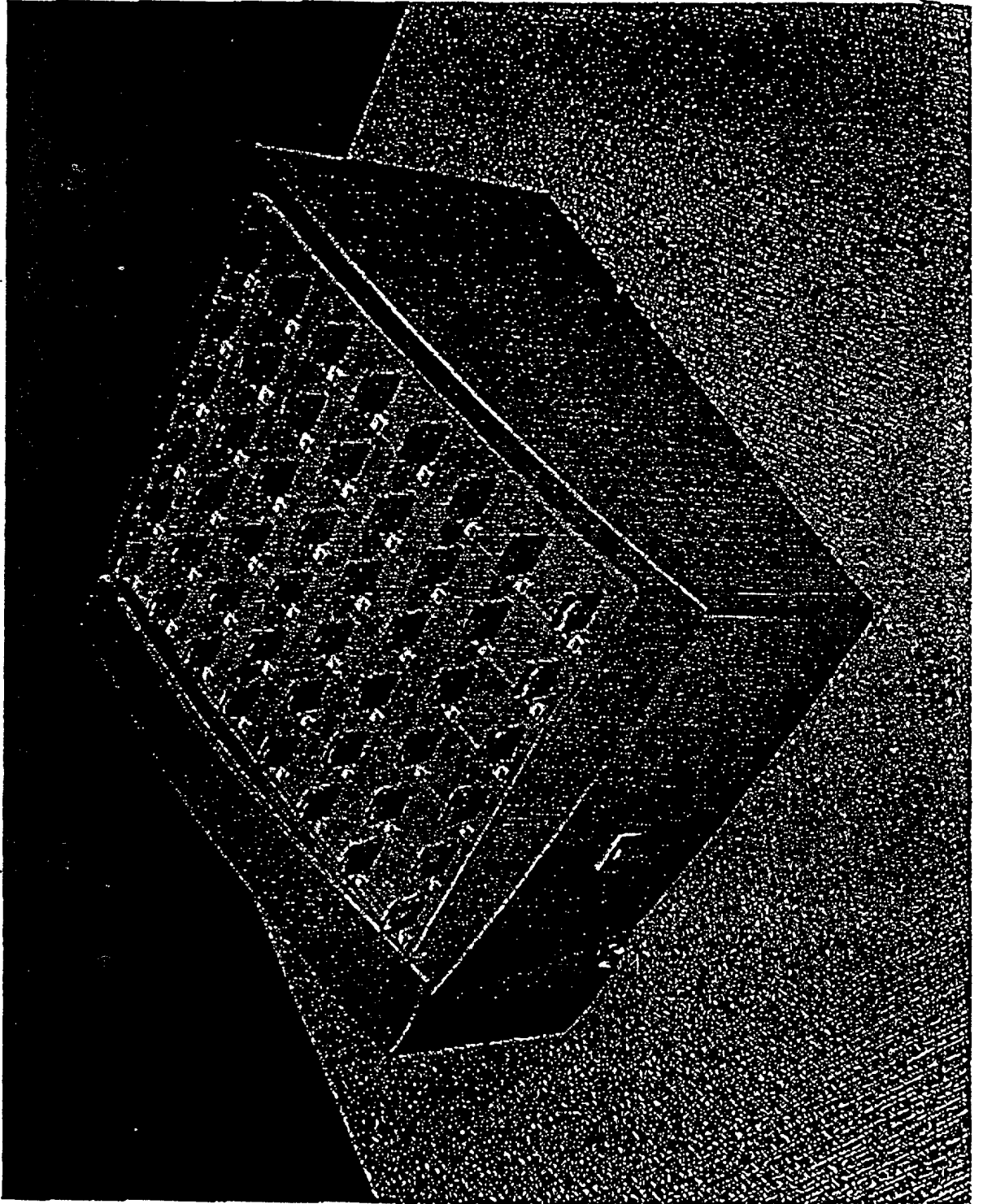


FIGURE 9

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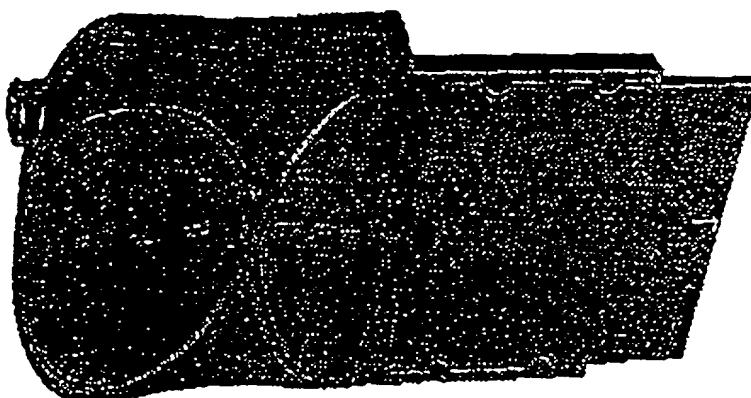
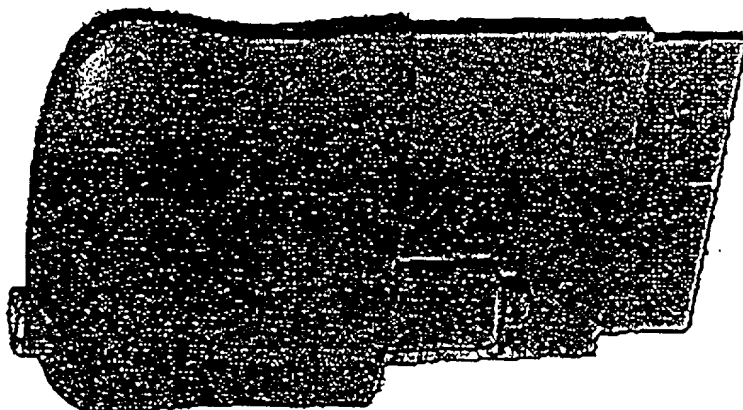


FIGURE 10

- Bar coded "reference" sheet, stored in tray under unit, with bar coded protocols, bar coded well and slot id's, bar coded commands (e.g. "cancel", "done", etc.)
- Standard bar code wand (preferably with built-in decoder), housed in the tray (hence hidden when not in use)
- Serial (RS-232/485) interface (preferred), or "keyboard wedge"
- Multi-code support (Code 39, Code 128, etc.)
- Bar code on chip carrier (1 code per "8 pack"), identifying test, batch, etc.
 - Peel off labels, with same code as on carrier, with each "8 pack"

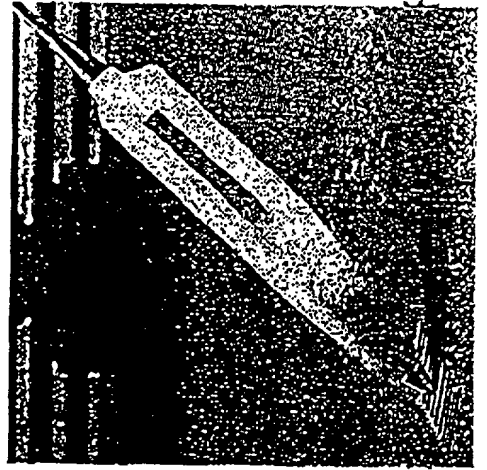


FIGURE 11

- Bar code usage scenario
 - User fills "8-pack" (all 8, or partially) from a 96 well plate, or from individual sample containers (PCR tubes, vacutainers, etc.)
 - Pull out tray (with bar code reference sheet) and grab wand
 - Scan "start" code
 - Scan protocol code from sheet (will remain in effect until "done" is scanned)
 - Scan chip code from carrier (will remain in effect until "done" is scanned)
 - For each cartridge, user will
 - ☐ insert the cartridge in an open slot. Unit senses new chip automatically
 - ☐ scan the sample ID by either
 - scanning 96 well plate bar code from plate and well code from sheet
 - or scanning unique sample ID from container
 - or scanning "no ID" from reference sheet
 - Scan "done" code. The protocol can now be started on these cartridges

FIGURE 12

- Bar code concept benefits
 - No keyboard entry (all routine setup can be entered via bar coding)
 - All routine entries accomplished while in front of unit (no going back & forth between PC & Hydra)
 - All bar code entries done from small, flat surface in front of unit
 - No need to label each chip or each slot (which would compromise appearance)
 - Uses small unobtrusive bar code wand, hidden when not in use
 - Is flexible with respect to sample container (tube, 96 well plate, etc.), chip usage (by row of 8, or by individual chip), and lab bar coding method

FIGURE 13

- "Oil can" concept (pressure feed, small sample volume)

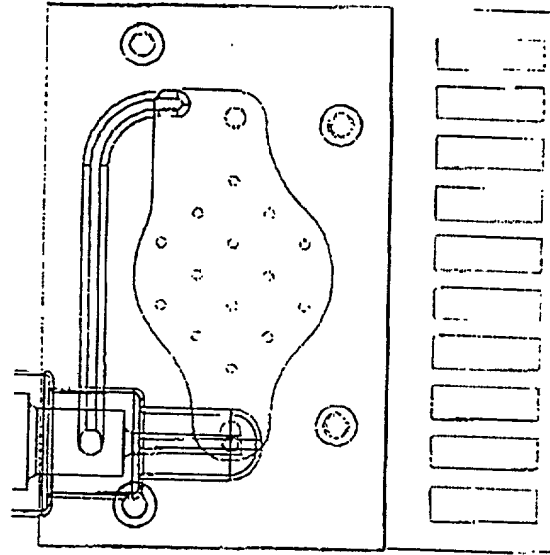
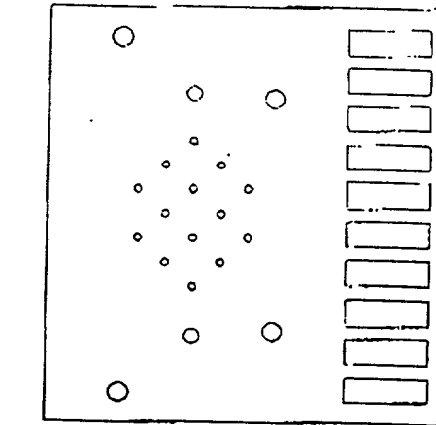
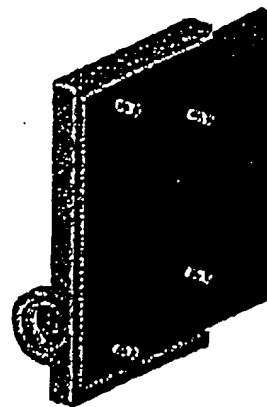
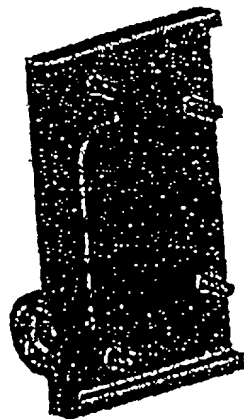


FIGURE 14

- PCR tube concept (gravity feed, large sample volume)

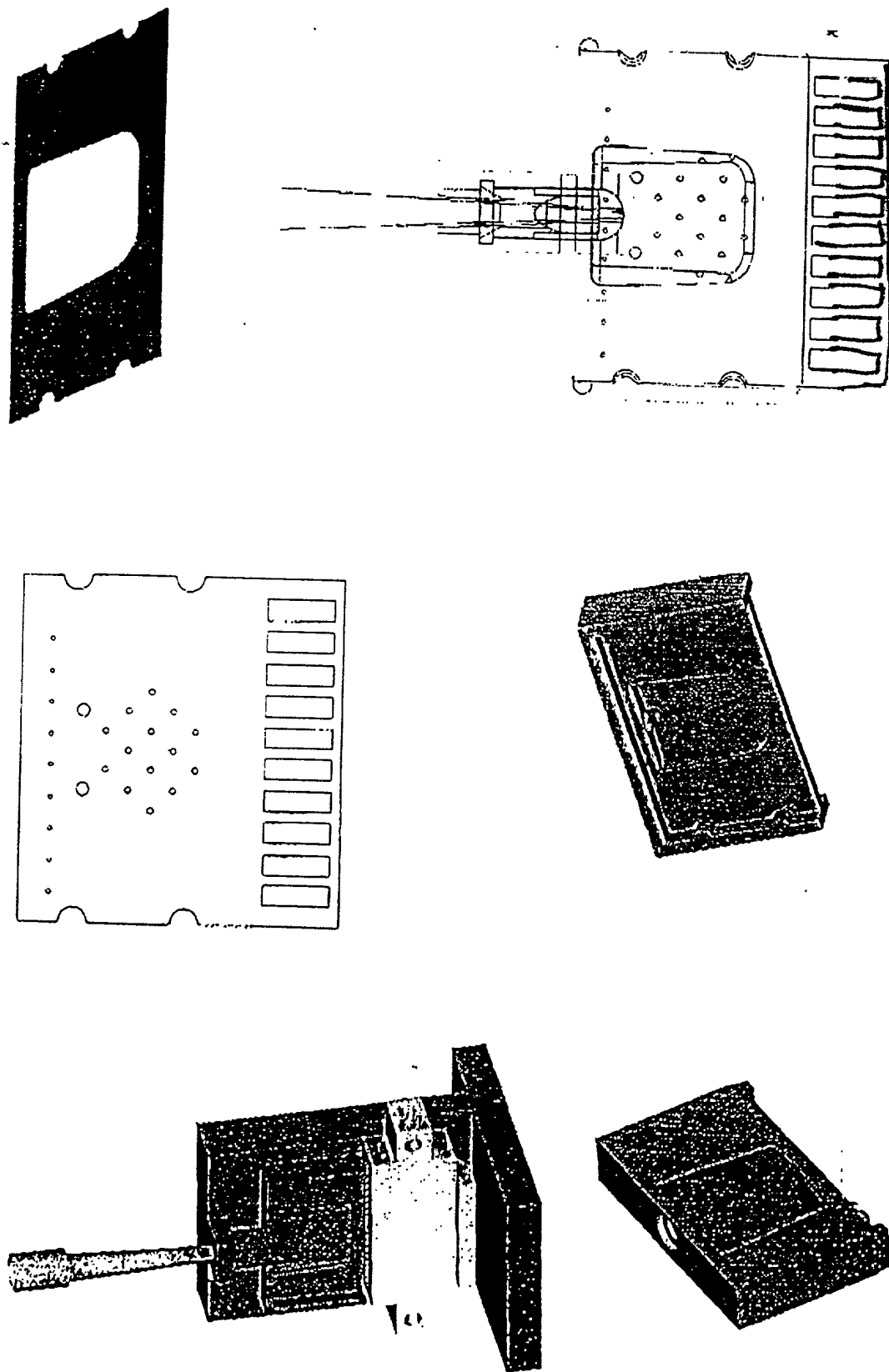


FIGURE 15

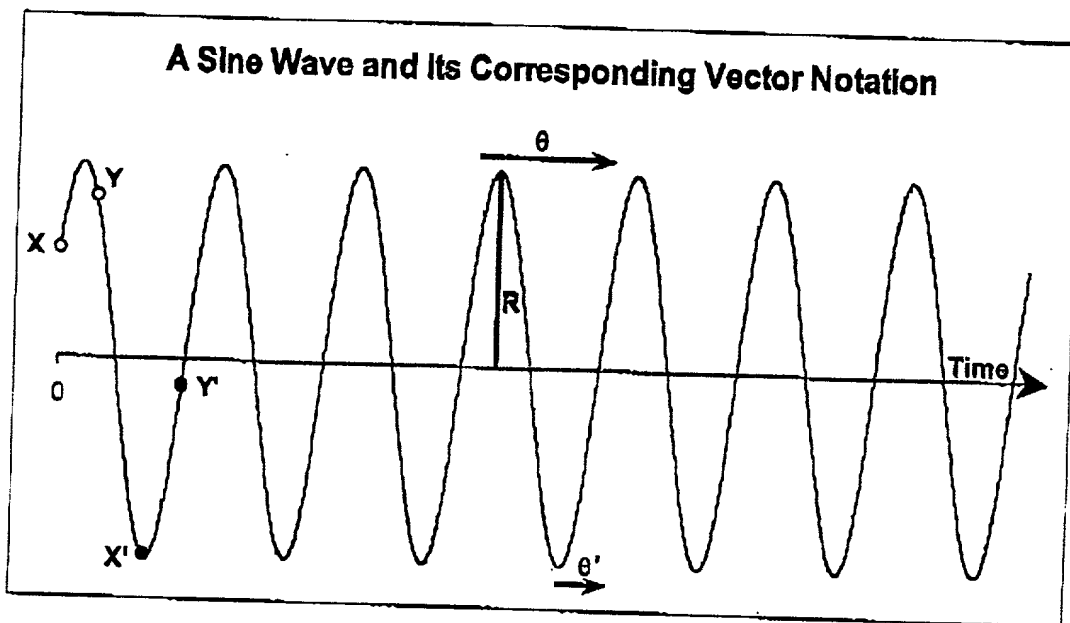


Fig
16

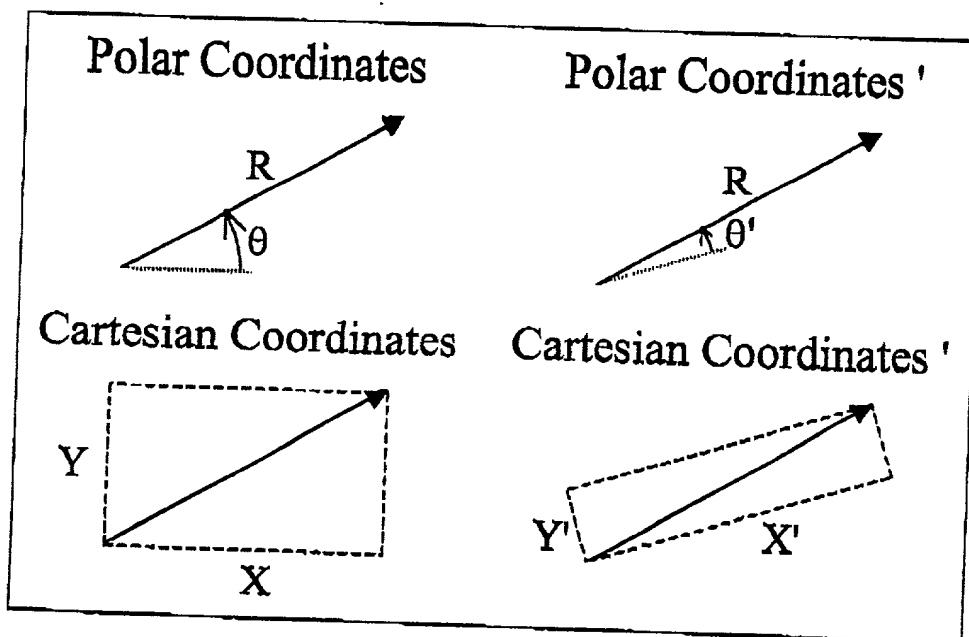


Fig
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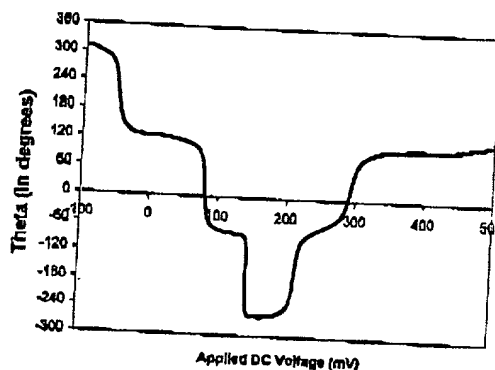
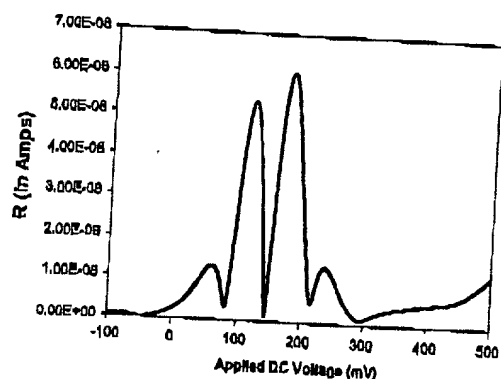


Fig
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Fig
18

Fig 20

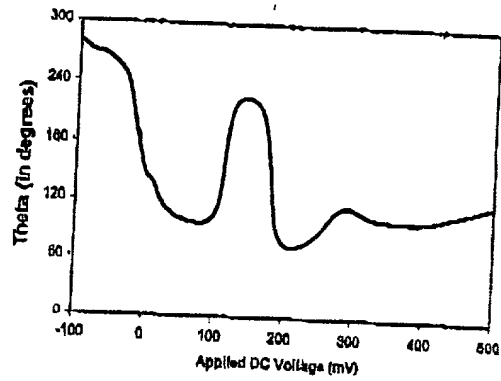
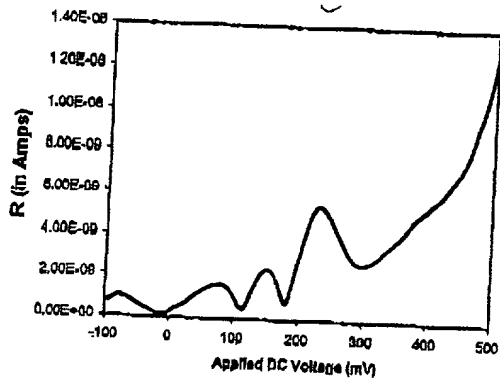
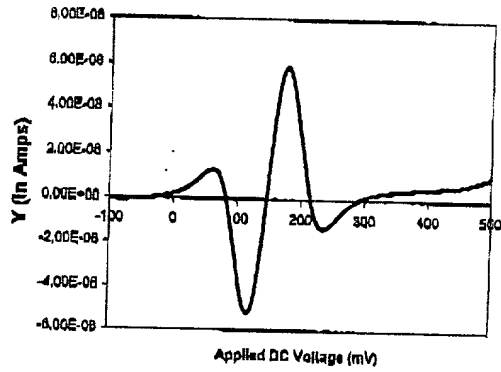
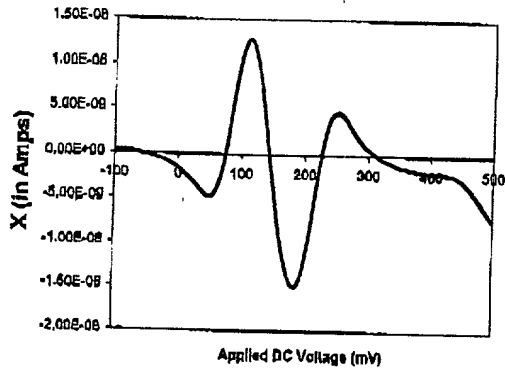


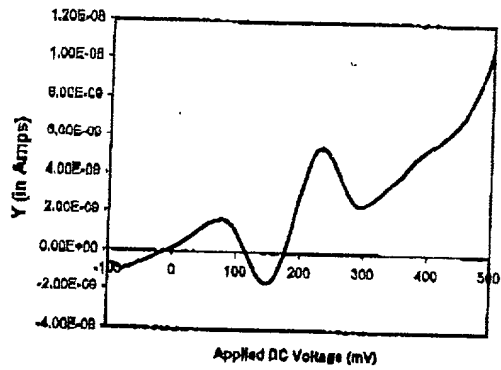
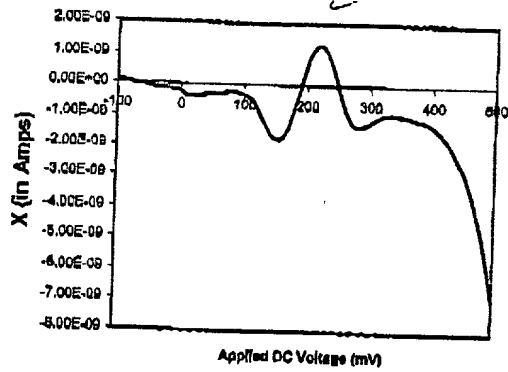
Fig 21

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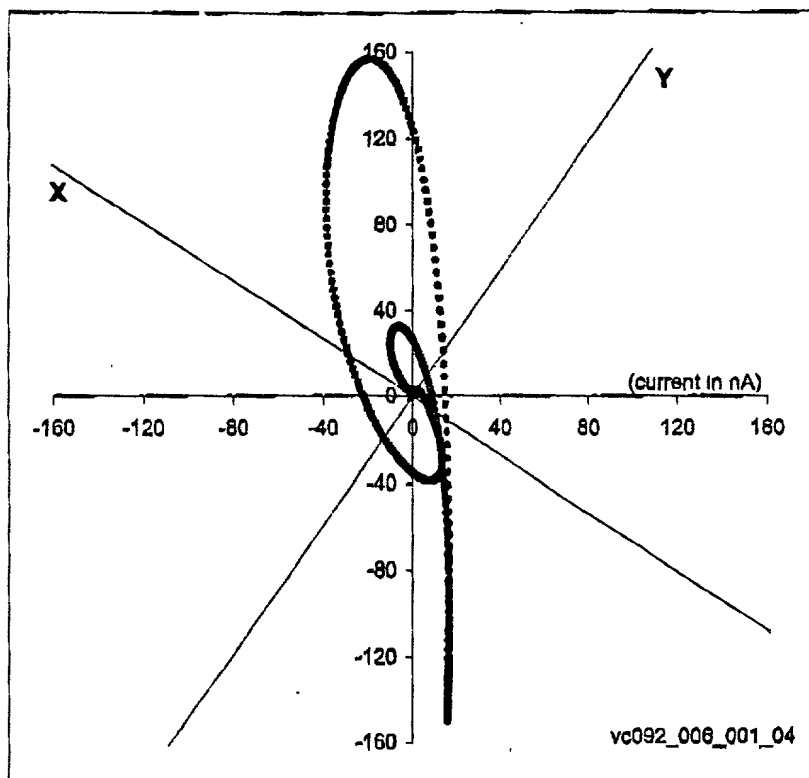


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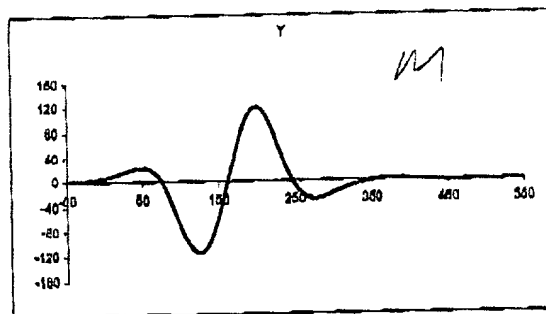
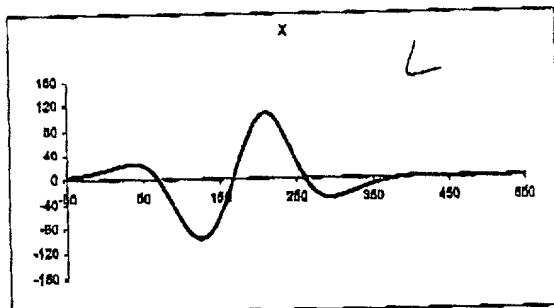
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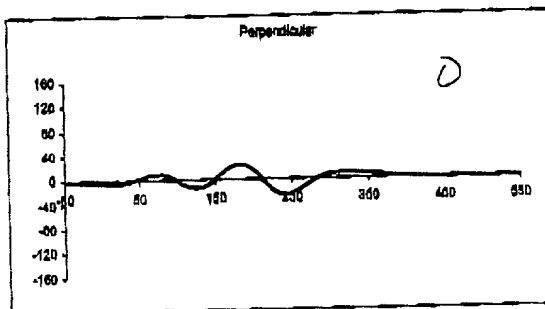
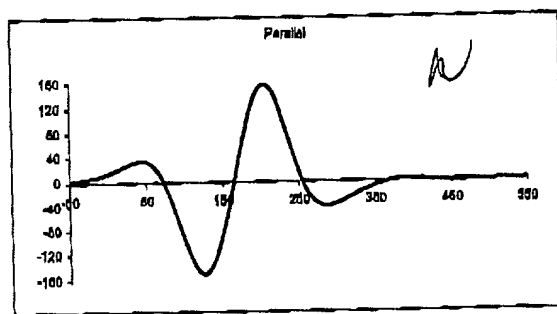
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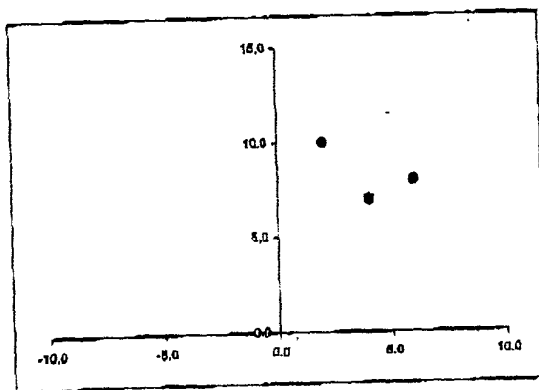
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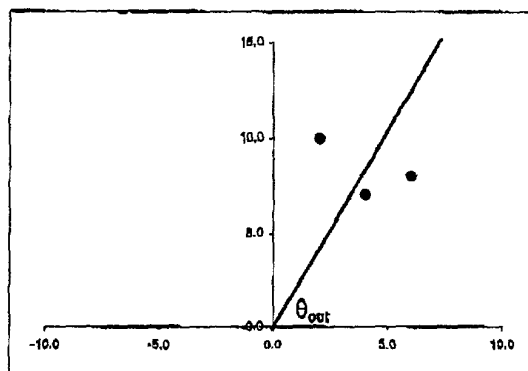
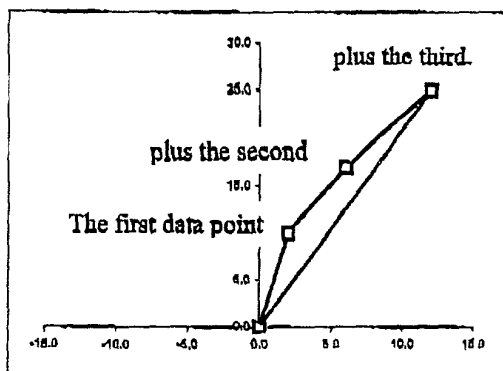
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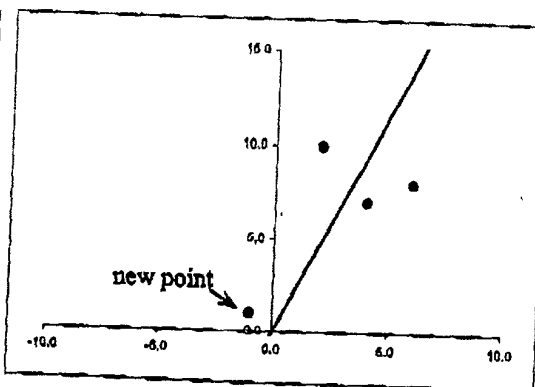
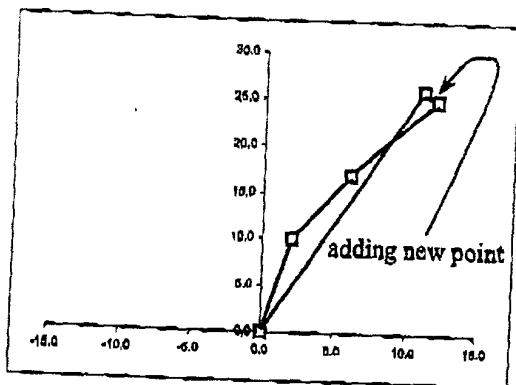
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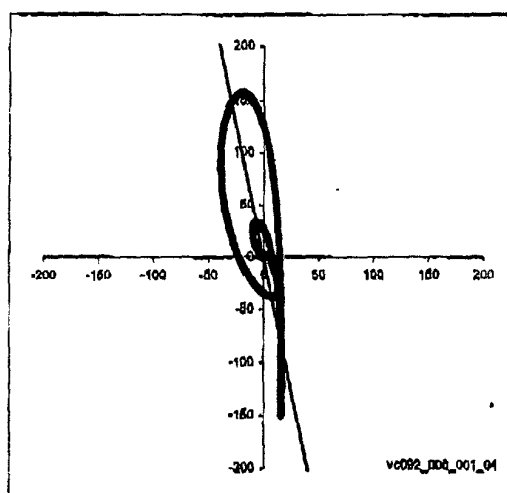
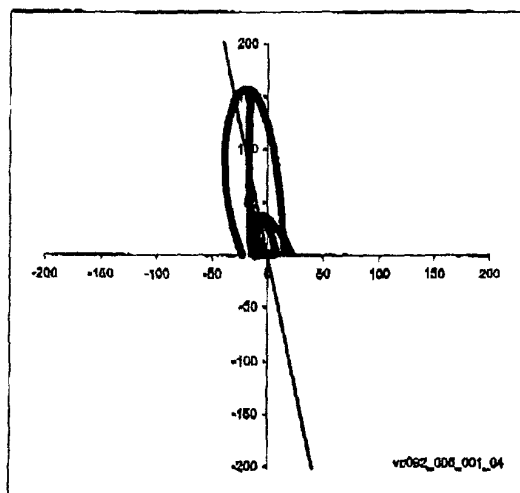


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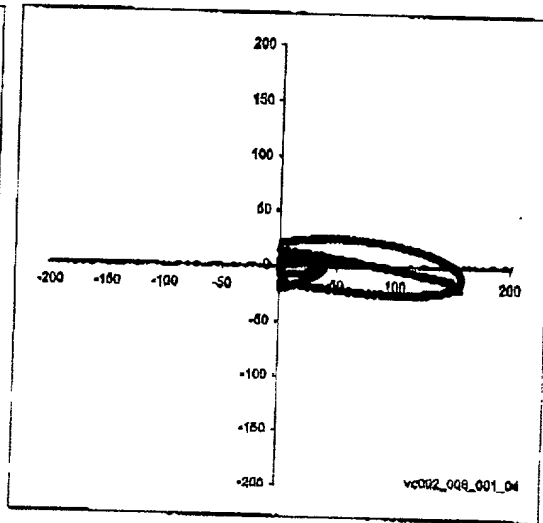
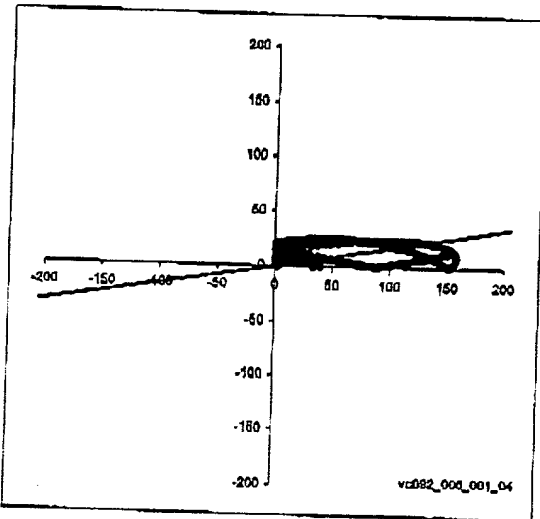
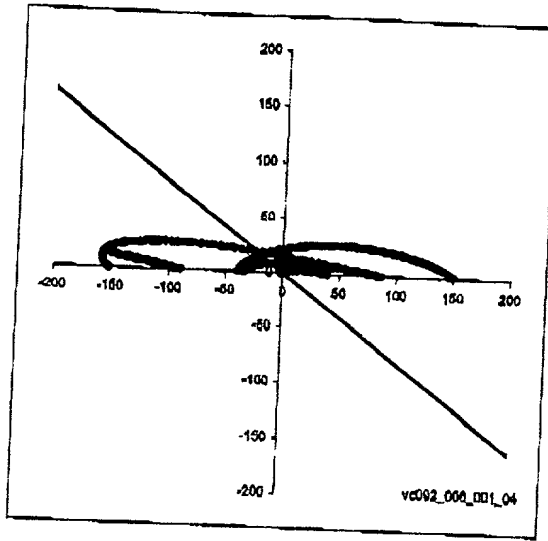
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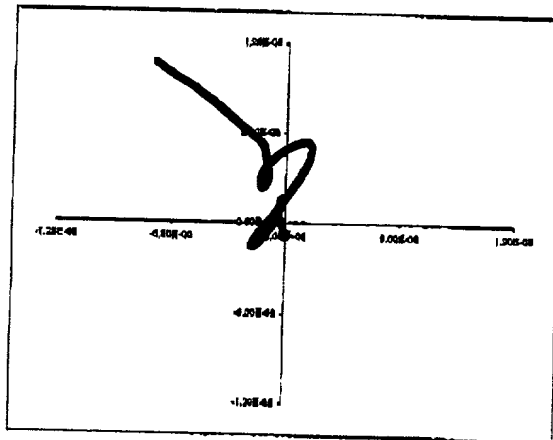


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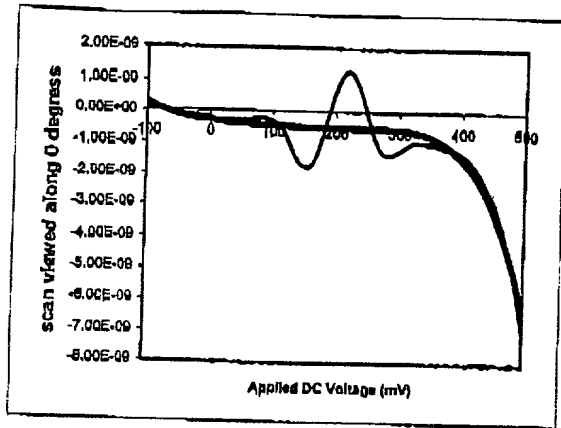
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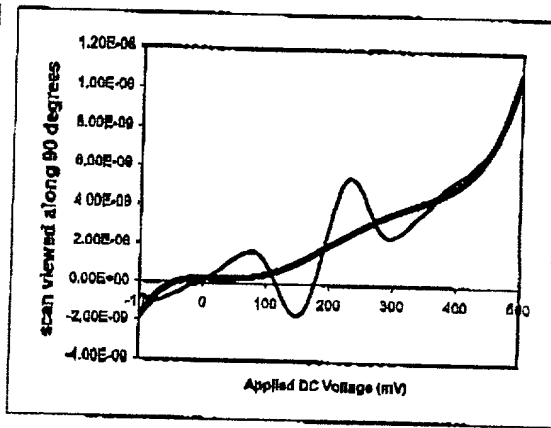
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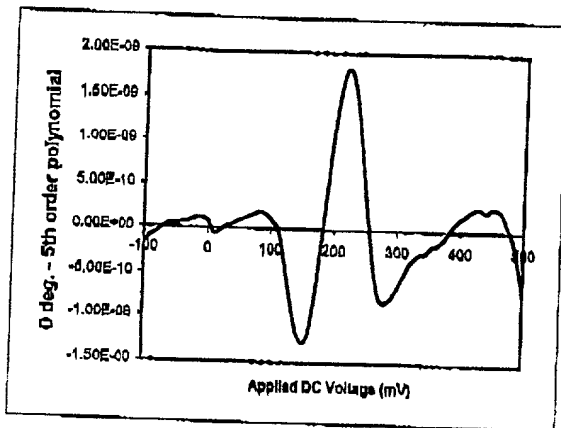
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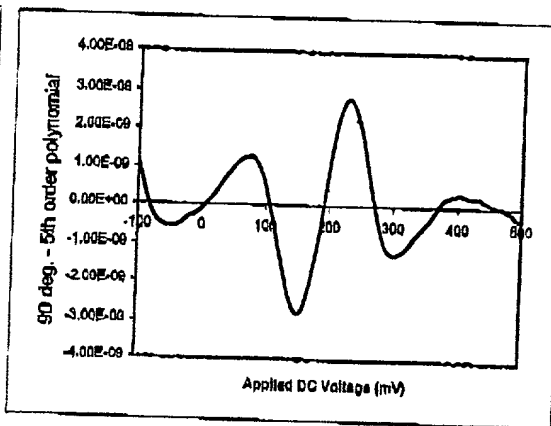
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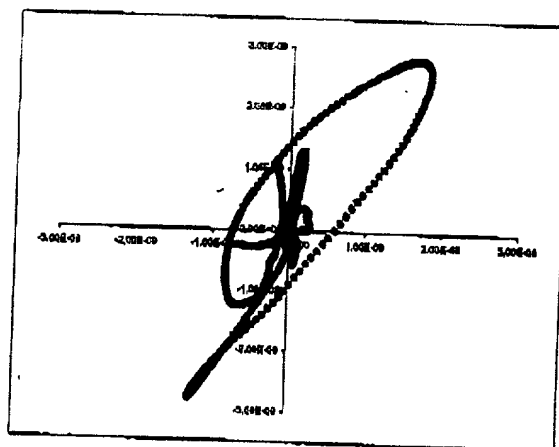
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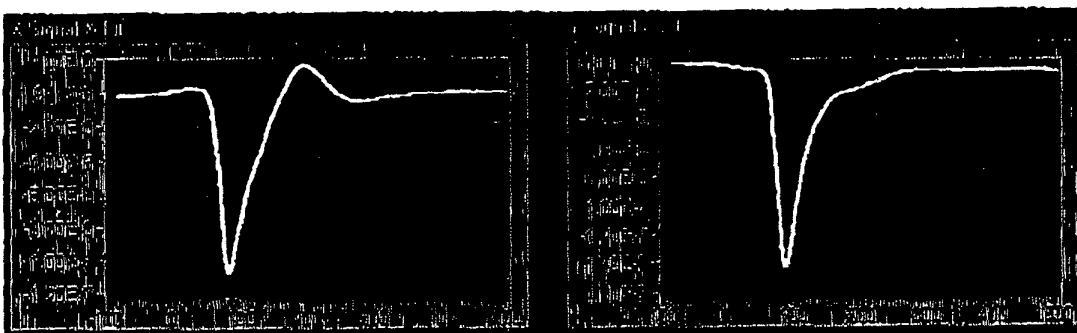
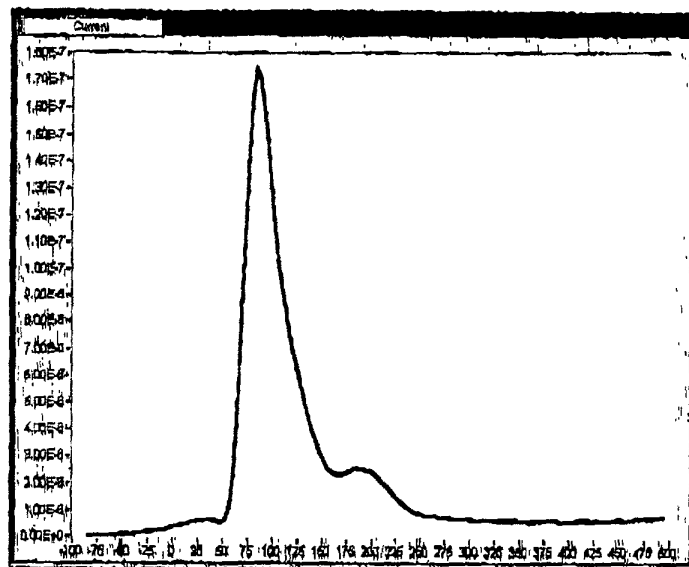


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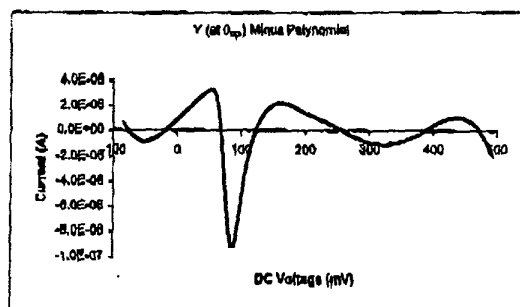
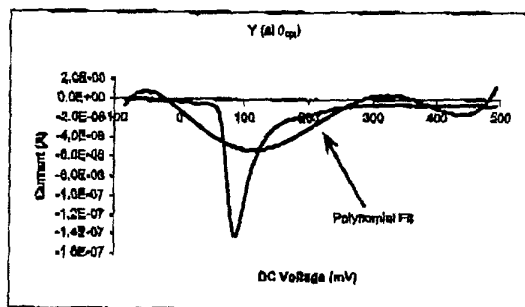
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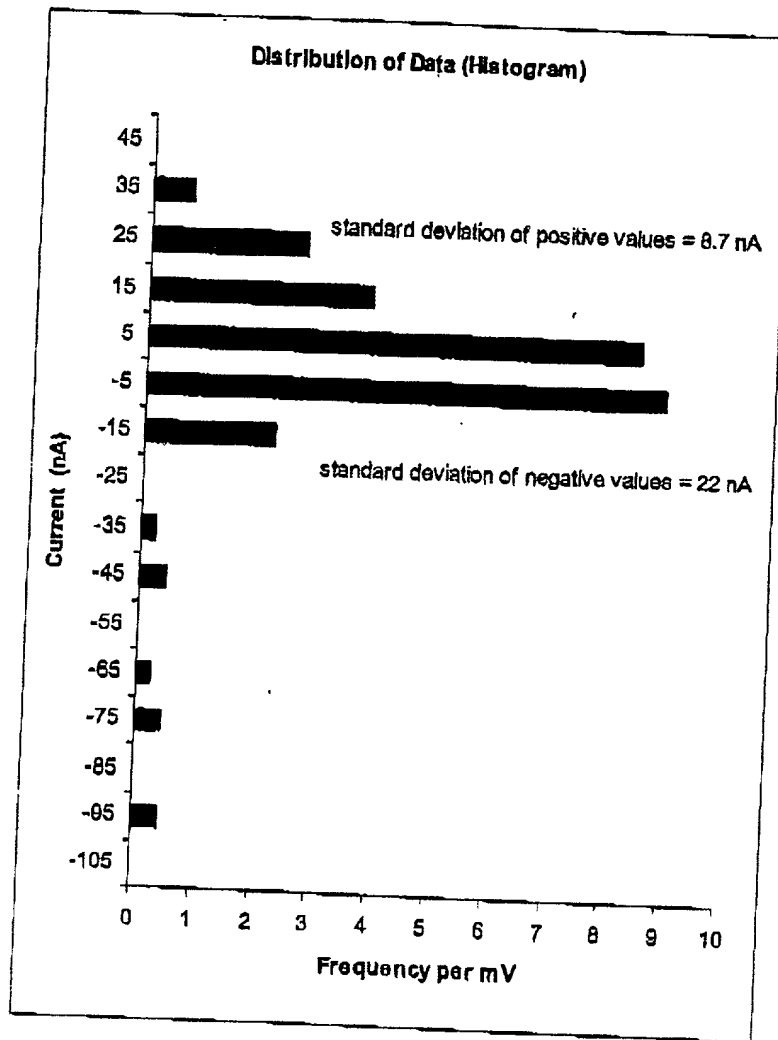
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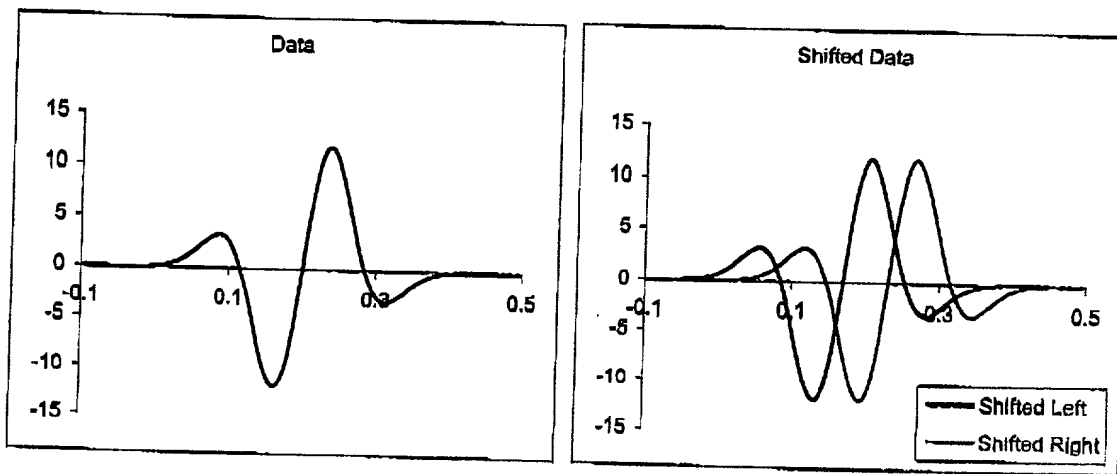
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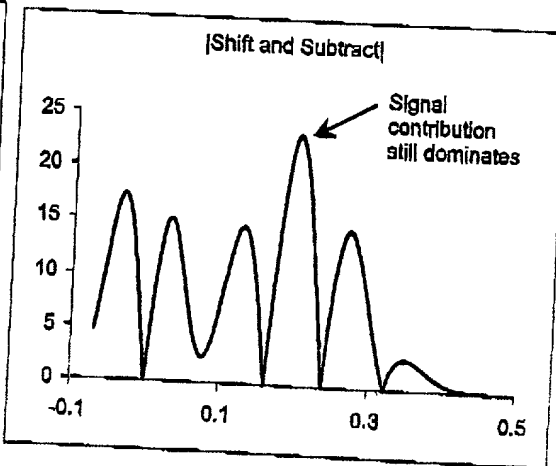
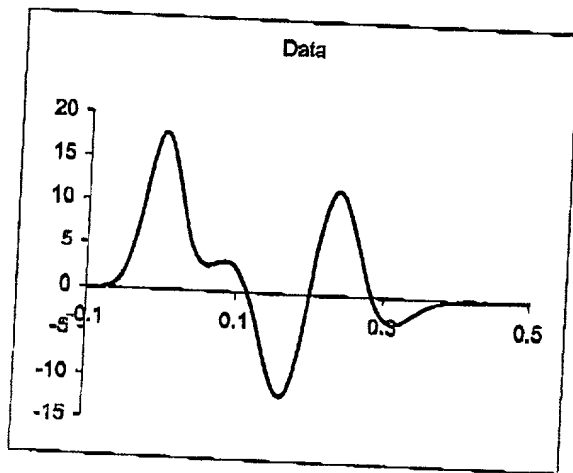
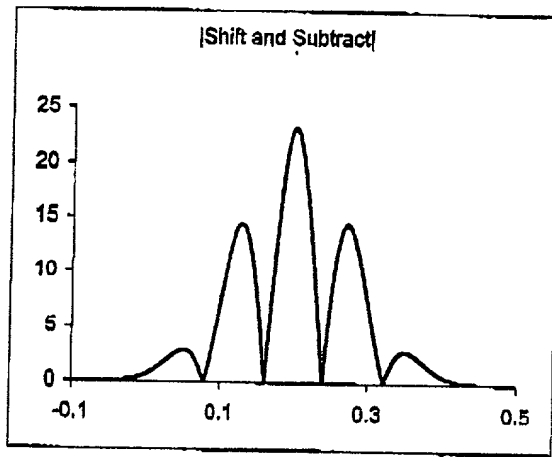


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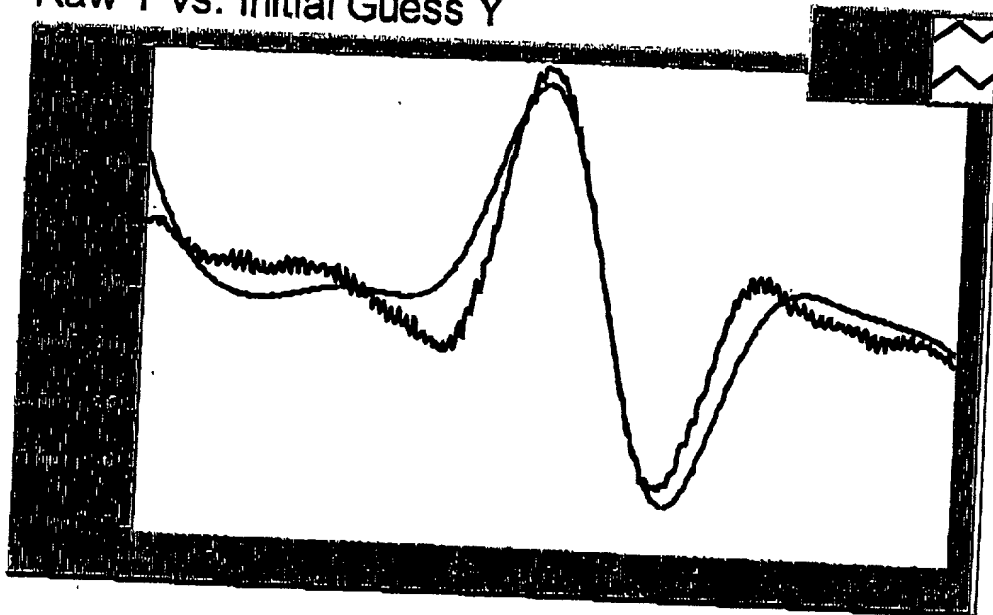
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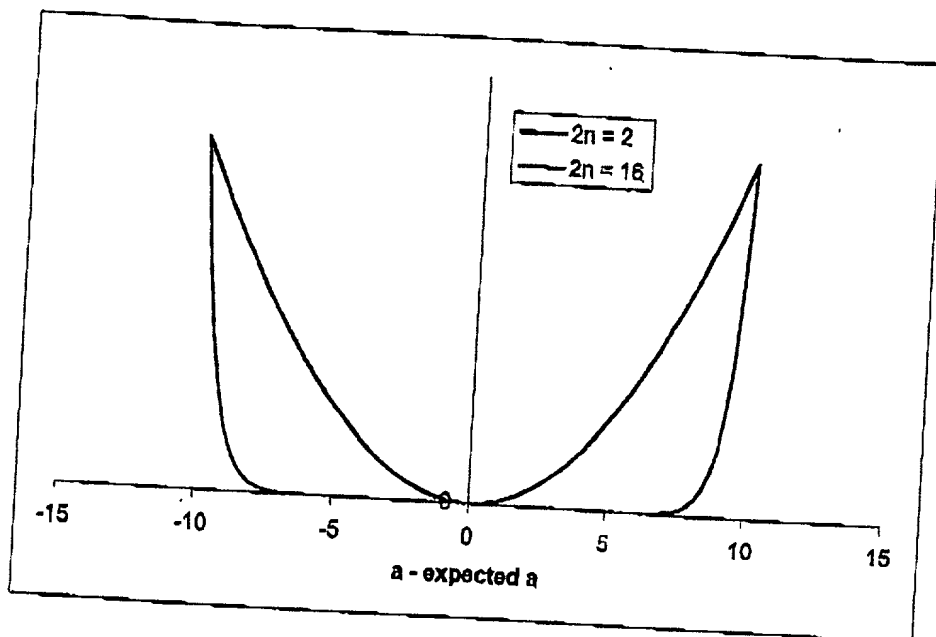


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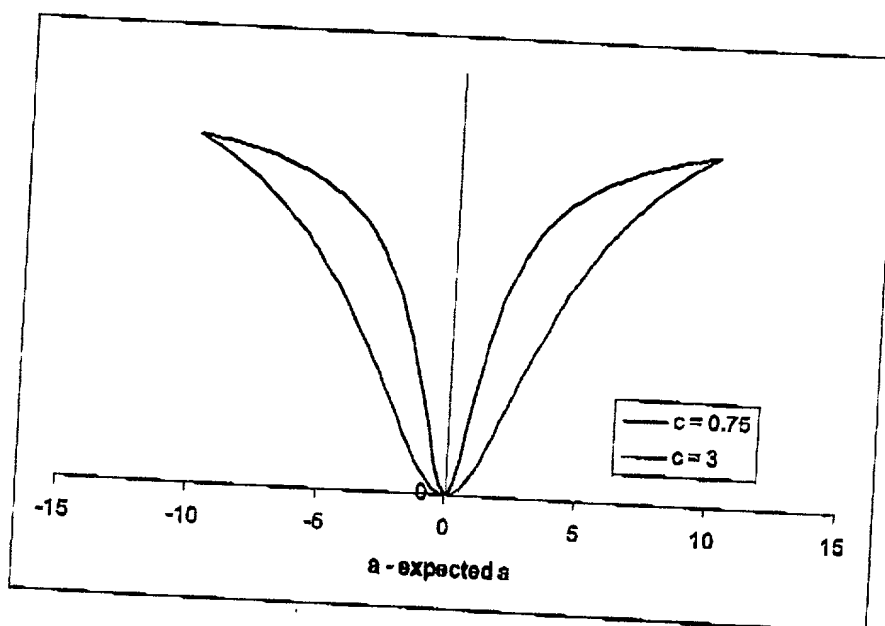


Raw Y vs. Initial Guess Y

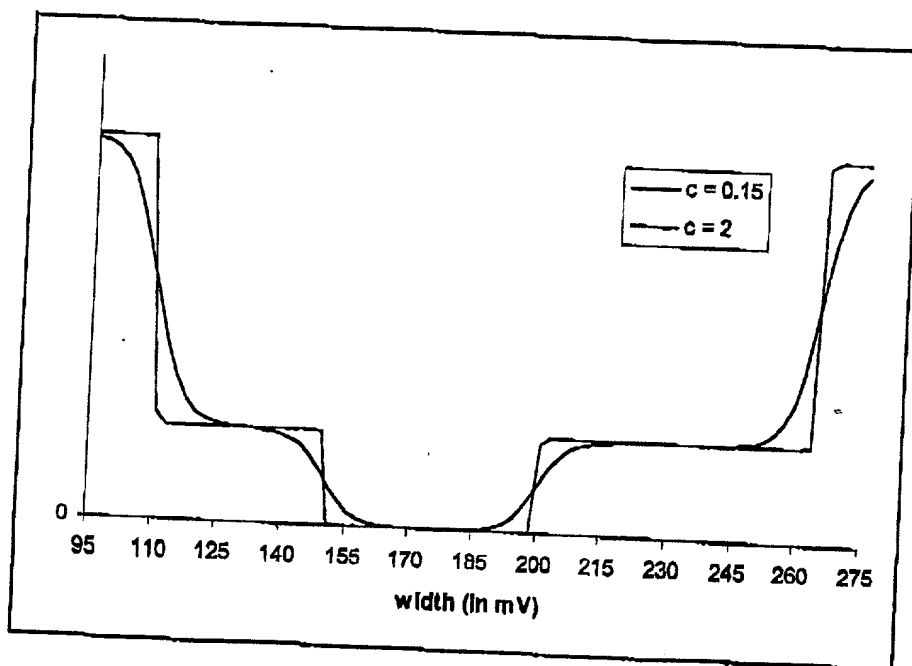




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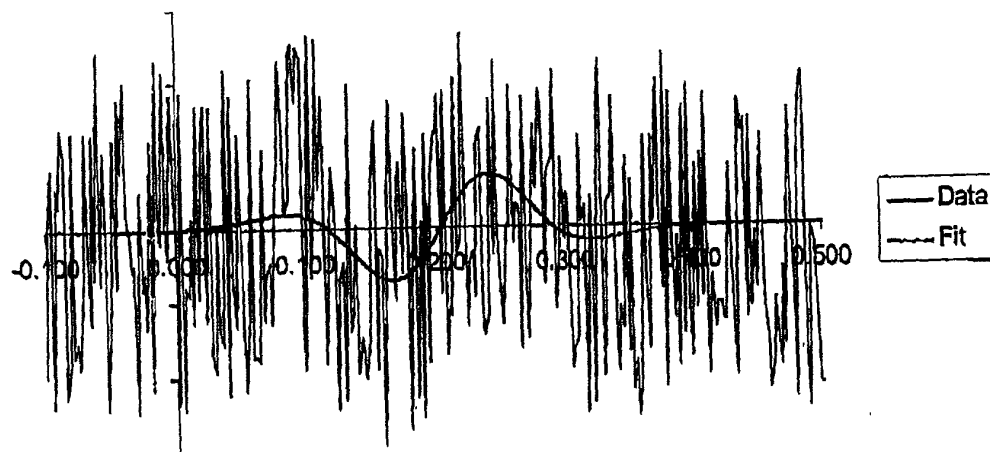


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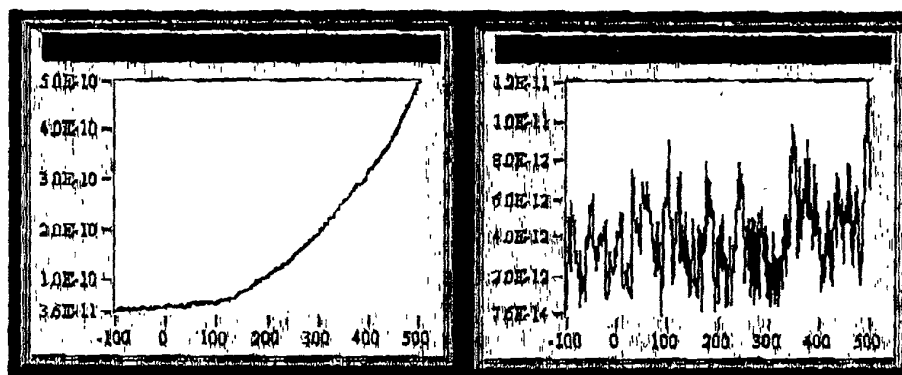


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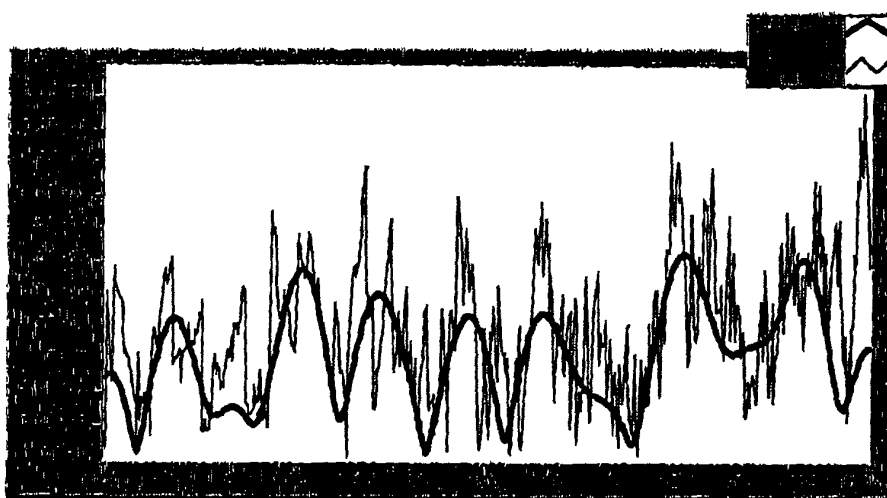
Simulated Noisy Data and Simulated Fit



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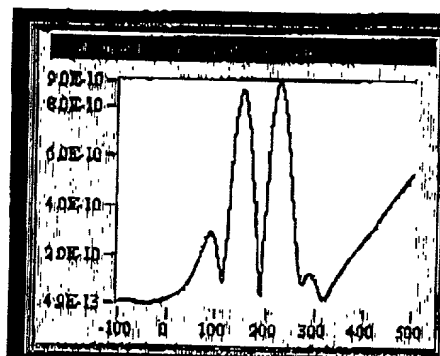


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